Partner Selection and University-Industry Linkages: Assessing Small Firms' Initial Perceptions of the Credibility of their Partners

Abstract

As promoting the engagement of firms and universities through collaborative linkages gathers pace among policymakers, it appears to be pertinent to examine in more detail the mechanisms that underpin their formation This paper examines the processes by which small firms assess the credibility of their potential partner when engaging in collaborative links with universities. Here, credibility is defined as the ability to deliver the promised knowledge and experience of a particular field when entering into a collaborative linkage with a university, representing the firms' assessment of the usefulness of the university as a potential partner. The paper presents two main findings; firstly, the credibility of potential university partners is based around the realism, comprehensiveness, and specificity of their knowledge. Secondly, credibility appears to be judged at an individual rather than institutional level. The implication of these findings to theory and practice are also discussed.

Key Words: credibility; partner selection; university-industry linkages, small firms, innovation

1. Introduction

This paper examines the processes through which small firms may judge the credibility of a potential university partner when developing a formal collaborative linkage. The engagement of universities with firms, so-called 'third mission' activities, is increasingly viewed as an effective means for promoting innovation across the wider economy (Thursby & Thursby 2002; Lambert 2003; Wilson 2012; Anon 2006). In particular, firms may benefit from developing university-industry (U-I) linkages through adding to their resource base, as well as increasing their innovativeness and competitiveness (Abreu et al. 2008; Hughes & Kitson 2012; Mowery & Sampat 2004; Fontana et al. 2006). Indeed, this is of particular interest to small firms, who may lack the resources to develop innovative outputs alone (Storey 1994; Vossen 1999) and yet still pursue the development of new ideas (Acs & Auderetsch 1990; Huggins & Johnston 2009; Huggins & Thompson 2017). Thus, while larger firms may be more likely to collaborate with universities (Laursen & Salter 2004; Mohnen & Hoareau 2003; Fontana et al. 2006; Scandura 2016), small firms may benefit more from this type of link (Motohashi 2005).

While there exists a broad literature examining the development of U-I links, yielding many insights into their formation (Perkmann et al. 2013).These linkages are considered to be specific forms of inter-organisational interaction, resulting from a strategic decision taken by a firm to collaborate with a university (Mindruta 2013). Given this viewpoint, partner selection is a critical part of the process where both value creation within the project, and its ultimate success have been shown to rest upon the selection of an appropriate partner (Park & Ungson 2001; Mitsuhashi & Greve 2009; Mindruta 2013; Mindruta et al. 2016). Indeed, the firm's partner is required to not only possesses appropriate knowledge and resources, but also able work in similar ways, to similar time scales, and respond to the same incentives (Stuart 2000; Ireland et al. 2002; Grant & Baden-Fuller 2004; Lambe & Spekman 1997). Consequently, when engaging in an inter-organisational collaboration, such as a U-I linkage, 'smart' partner selection is widely cited as an important factor in the likely success of a project (Shah & Swaminathan 2008).

In the context of U-I linkages, smart partner selection for small firms requires them to not only engage with a university that possesses the required knowledge and expertise to perform effectively in a collaboration, but also possess the ability to judge the extent to which their partner will actually deliver their promised contributions of knowledge and expertise. This last point, then, refers to the extent to which a university partner appears to be credible to a small firm (Hovland et al. 1953). Furthermore, the concept of partner credibility is generally posited to be an important component of trust, signalling to the firm the extent to which a partner can be both relied upon and may come to be embedded into a project (Lindskold & Svenn 1978). As such, these factors have been shown to facilitate the successful transmission of knowledge between actors, and promote successful collaborations (Monczka et al. 1998). Given the importance of credibility, the aim of this paper is to explore the means by which small firms may assess the credibility of a university when developing a collaborative link.

In order to achieve this aim, the paper presents a case study of 16 small UK firms that had recently completed a formal collaborative project with a university through the Knowledge

Transfer Partnership (KTP) programme. The analysis examines the means by which these small firms perceived the credibility of their partners, i.e. the means by which how they were persuaded that the universities with which they partnered convinced them that they were able to deliver on their promises of supplying the appropriate knowledge and expertise to the project (Hovland et al. 1953; Koenraad Debackere & Veugelers 2005). This analysis draws on a conceptual framework which suggests that credibility is based around five factors: 1) the perceived fit of a partner's knowledge base (*realism*); 2) the ability of a potential partner to stipulate a focus for a project (*specificity*); 3) the way a potential partner demonstrates a clear logic in their method (*consistency*); 4) the lack of any gaps in the proposed partner's knowledge (*comprehensiveness*); and 5) making effective assumptions regarding the project (*validity*) (Menon & Varadarajan 1992; John & Martin 1984). By using credibility as an additional lens through which to understand the formation of U-I linkages, the paper contributes to the extant literature through providing a deeper insight into the partner selection process works in practice with respect to U-I links and their formation.

The paper presents three main findings; firstly, the credibility of potential university partners is based on the realism, comprehensiveness, and specificity of knowledge. Thus, it is the ability of the partner to show that they possess the following: 1) knowledge and expertise that is appropriate to the project; 2) comprehensive knowledge of a given field; and 3) the ability to apply their knowledge to the firm's project. Importantly, credibility appears to be judged at an individual rather than institutional level, thus, this concept focuses on the academic partner rather than the entire university. Based on these findings, the paper provides an additional theoretical lens through which this process can be examined and, given the focus on the individual, suggests that academic-industry links may in fact be a more appropriate term to describe these types of collaboration. The paper is structured as follows; Section 2 presents the conceptual framework underpinning the analysis. Section 3 then outlines the methodology, while section 4 presents the results of the analysis and Section 5 the discussion. Finally, Section 6 provides the conclusions and discusses their implications.

2. Conceptual Background and Theoretical Framework

2.1 University-Industry Linkages

The literature on university-industry (U-I) linkages showcases universities as significant sources of external knowledge and expertise with which firms can exploit for commercial gain (Audretsch et al. 2012; Mansfield 1995; Bok 2003; D'Este & Patel 2007; Huggins, Johnston & Stride 2012; Mueller 2006; Anderson et al. 2007; Kauffeld-Monz & Fritsch 2013; Rutten et al. 2003). The evidence suggests that U-I links offer significant benefits to firms; engaging with universities in this manner has been shown to result in increased sales, enhanced research productivity, and promote higher levels of patenting (Fontana et al. 2006). Collaboration with universities, therefore, can be said to promote learning within firms, as well as assisting them in broadening the scope of their activities (Hagerdoorn et al. 2000; Abreu et al. 2008; Lööf & Broström 2006). These outcomes are also particularly important from the perspective of small firms as engaging in U-I linkages may allow them to procure knowledge and expertise they lack the resources, particularly financial, to develop internally the relevant capabilities to solve

a particular problem, leverage particular skills and expertise, or obtain the necessary knowledge and resources with which to enhance their competitiveness (Love & Roper 2015; Romijn & Albaladejo 2002; Vossen 1999; Acs & Auderetsch 1990).

Consequently, the pursuit of U-I links results from a strategic decision by a small firm to take advantage of these benefits, i.e. it is not the result of a random process, (Mindruta 2013). Yet, while it may be strategic in intent, their development path may be uncertain, akin to the establishment of any inter-organisational linkage (K Debackere & Veugelers 2005). While the success of a collaborative project depends on the usefulness of a partner's knowledge (Menon & Varadarajan 1992), the problem of asymmetric information means that both parties are unlikely to be fully aware of the potential knowledge and capabilities possessed by the other. Therefore, despite the benefits from engaging in U-I linkages, this starting point of this paper is that, at the point of initiation, the outcome of a collaborative project is largely unknown. As, Thus,

It is argued that the uncertainties surrounding the outcome of U-I linkages stem from the different organisational contexts and institutional environments in which both firms and universities operate (Messeni Petruzzelli & Rotolo 2015), particularly the degree to which each focuses on either the exploration or exploitation of knowledge (Lavie & Drori 2012). The tension resulting from the fact that firms tend to focus on the former, and universities the latter, (Messeni Petruzzelli & Rotolo 2015; Lavie & Drori 2012). Thus, both sets of actors may be responding to different incentives (Garman 2011).

These tensions may then manifest themselves in various ways; firstly in terms of differing motivations, with firms are generally seeking knowledge for commercial purposes and academics seeking to undertake novel research whilst developing a reputation in a particular field (D'Este & Perkmann 2010; Lam 2011). Secondly, tensions between the two actors may arise from their differing logics and methods of working (Beech et al. 2010; Bartunek & Rynes 2014). Thirdly, it has been observed that actors within firms and universities work to differing time scales, with firms operating to a stricter timescale dictated by commercial demands (Walsh et al. 2007). Fourthly, different communication styles may hinder the transfer of knowledge (Wasserman & Kram 2009). Finally, a large proportion of academic research may not be applicable or important to private firms, resulting in a relevance gap (McGahan 2007; Rasche & Behnam 2009; Anderson et al. 2001). Thus, a successful U-I collaboration must circumvent these tensions, particularly as there exists an expectation that the collaboration will have a positive effect on the firm (Mindruta 2013).

These differing organisational contexts and institutional environments result in the existence of both costs and benefits to firms when developing collaborative links with universities; the main issue facing the firm in their search for a partner is whether they can ensure that they reap the benefits, while minimising their costs. Thus, maintaining the balance between exploration and exploitation may be the key to a successful collaboration (Lavie & Drori 2012); indeed, the noted benefits of U-I collaborations in the extant literature suggest that firm and universities are not necessarily incompatible. What is required then is a means of tackling their differences to minimise uncertainties. Here, contractual means may be a suitable method for tackling

uncertainty and deterring opportunistic behaviour among actors; yet this adds to the expense of a project and consumes scarce resources in merely addressing uncertainty through holding actors to an agreed plan of action (Williamson 1993). However, this may disproportionately affect small firms, which possess fewer resources with which to commit (Barney 1991), preferring to devote their resources to productive activities; thus, tackling uncertainties in this way makes collaboration less attractive.

2.2 Partner Credibility and the Formation of U-I Linkages

The concept of credibility generally refers to whether a source is seen as *believable* and has been examined extensively within the marketing/international marketing literature where it is held as an important factor in successful business-to-business interaction (Malshe 2010; Barnes et al. 2015; Wang et al. 2016; Arslanagic-Kalajdzic & Zabkar 2015; Finch et al. 2015). This literature suggests that higher levels of credibility are associated with higher levels of persuasion, highlighting the power of a credible agent and the value of a good reputation (Pornpitakpan 2004). Consequently, in a commercial setting, credibility equates to a more effective means of persuading consumers to purchase a product or service, thereby establishing corporate credibility (Newell & Goldsmith 2001; Harmon & Coney 1982). At a firm level, credibility typically signals plausibility, reliability, expertise and trustworthiness (Doney & Cannon 1997; Belch et al. 1987). In short, it can be considered to be the ability of an individual or organisation to persuade other actors that they are able to deliver on their promises (Hovland et al. 1953).

In the context of marketing/R&D interaction within an organisation, previous work suggests that credibility has a positive influence on the perceived usefulness of knowledge (Moenaert & Souder 1996; Belch et al. 1987). A similar result is found with respect to buyer-seller relationships, in particular the more credible the source is perceived, then the more likely an ongoing relationship will be established (Ganesan 1994). Thus, credibility can be seen as an important heuristic for establishing whether a potential partner possesses the appropriate knowledge and expertise, as well as a strong predictor of whether an interaction will facilitate an enduring and successful relationship. However, this factor has not been explicitly examined in the context of U-I interaction and may be a useful tool for understanding how small firms assess their potential partners.

Credibility, however, is a multi-faceted concept, operationalised within the literature in terms of five factors: realism of expertise, specificity of knowledge, consistency of knowledge, comprehensiveness of research, validity of research (John & Martin 1984; Menon & Varadarajan 1992). With respect to U-I links, f the first factor, *realism*, is based around the firm's perceptions of extent to which an academic partner’s knowledge fits the prospective project. Here, credibility comes from the ability of the partner to highlight the fact that they possess knowledge that may be relevant to the project. Secondly, *specificity* refers to the academic partner's ability to stipulate a focus for the firm’s project, thereby confirming their ability to take the idea and develop it. Thirdly, *consistency* highlights the existence of a clear logic in the academic partner's plan and whether it clearly applies to the firm’s project. Fourthly, *comprehensiveness* refers to a lack of apparent gaps in the academic partner's

knowledge from the firms' point of view. Finally, *validity* refers to the fact that the academic partner has made valid assumptions with respect to the firm's project (John & Martin 1984).

Credibility is typically conceptualised as having two dimensions, source credibility and information credibility (Gupta & Wilemon 1988), i.e. the importance *who* is communicating a particular message, as well as *what* is being communicated. Indeed, given this distinction, John & Martin's (1984) framework resembles what Gupta and Wilemon describe as information credibility, focussing on whether a communication can be interpreted as realistic, well presented, objective, consistent and complete, useful and appealing (1988: p. 22). The latter extend the concept to consider the source credibility in terms of the individual providing the message and whether they exhibit characteristics such as being cooperative, open, competent, friendly, knowledgeable, rational, and respected (ibid).

In the case of university-industry linkages, the perceived credibility of a potential university partner relates to firms' perceptions of its expertise and trustworthiness as a source and consequently the ability to engage in effective knowledge transfer (K Debackere & Veugelers 2005). As U-I links represent a strategic choice by firms and are non-random (Mindruta 2013), then partner selection will indeed be an important determinant of the potential success of the collaborative project (Park & Ungson 2001), suggesting that the ability of a firm to accurately assess the ability of a potential partner to meet their obligations in terms of providing the required knowledge is crucial (Dholakia & Sternal 1977; Sharma 1990; Doney & Cannon 1997). Accordingly, from the university's perspective, their aim is to persuade potential partners that they firstly possess the required knowledge and expertise and, secondly, this will be sufficient in order to realise the project's aims and objectives. In short, they must convince potential partners that their knowledge is useful to them (Menon & Varadarajan 1992; John & Martin 1984; Shrivastava 1987). Consequently, not only must the message be clear but the messengers must also be believable (Gupta & Wilemon 1988).

2.3 U-I Linkages: Determinants of Partner Selection

There is a wealth of literature examining the development of U-I linkages, highlighting the importance of factors such as proximities, both spatial and non-spatial, network ties, university characteristics, and firm characteristics (Perkmann et al. 2013; Huggins, Johnston & Stride 2012; Johnston & Huggins 2016; Geuna & Muscio 2009; Fontana et al. 2006; D'Este & Patel 2007; Hewitt-Dundas 2012; Giuliani & Arza 2009). Indeed, similarities between the actors has been highlighted as an important factor, with many highlighting the importance of organisational and technological proximity in their development, the distinction between these two proximities generally focusing on the extent to which the actors have a shared history (organisational proximity) or are working in the same disciplines (technological proximity) (Knoben & Oerlemans 2006; Aguilera et al. 2012). As such, these types of proximity capture the similarities between agents based on shared knowledge, working practices, and culture, captures the ease with which agents are able to interact due to them utilising similar languages, routines, and behaviours (Aguilera et al. 2012; Torre & Rallet 2005). Indeed, prior studies have suggested that similarities between actors may increase the perceived credibility of a partner

(Feldman 1984), with these cultural similarities also being shown to play an important role in facilitating knowledge transfer between actors (De Long & Fahey 2000; Battistella et al. 2015).

Within the credibility literature, proximity typically focuses on organisational and technological, (Dawes & Massey 2005; Malshe 2010). which rather ignores the spatial dimension, shown to be a significant factor in the formation of U-I linkages (Giuliani & Arza 2009; D'Este & Perkmann 2010; Johnston & Huggins 2016; Perkmann et al. 2013). Indeed. spatial proximity has been found to enhance the effectiveness of collaborative links (Capaldo & Petruzzelli 2014), through: 1) allowing the actions of each to be observed by the other, thus providing an assessment of the likely effectiveness of a partner (Gulati 2007), and 2) increasing the intensity of collaborative links, with the higher levels of face-to-face interaction promoting collective learning and trust (Capello & Faggian 2005; Storper & Venables 2004; Wood & Parr 2005). Indeed, a broad range of proximities have been found to influence the formation of these linkages suggesting that all should be examined in this context. (Johnston & Huggins 2016; Steinmo & Rasmussen 2016). This is particularly important in the case of small firms, which, while tending to rely more heavily on developing more spatially proximate links (Johnston & Huggins 2017; Broekel & Boschma 2012; D'Este & Iammarino 2010), have also been shown to develop collaborative links through non-spatial forms of proximity (Davenport 2005).

The extant literature on U-I linkages also highlights the importance of a university's characteristics as a determinant of the development of collaborative links. For example, universities undertaking world-leading research are likely to be members of more extensive knowledge networks (Bathelt et al. 2004), and institutions and departments performing well in ranking metrics typically tend to attract more distant partners (Hewitt-Dundas 2011; Laursen et al. 2011), possibly providing a signal of its usefulness. In addition, there is evidence that, within science and technology disciplines, higher quality research outputs within a department are related to a greater level of industry involvement among academics, signalling their willingness to engage with industry (Perkmann et al. 2011a). Thus, higher levels of engagement, through the existence of a broad set of commercial ties, may act as a signal of an ability not only to create knowledge but to also exploit it, providing a hint as to the usefulness of their knowledge and their credibility as a partner. Indeed, as higher levels of external engagement have been found to be linked with a higher propensity to commercialise knowledge (Perkmann et al. 2013), further suggesting that broader networks are associated with a predilection towards exploitation activities.

Despite the evidence of institutional importance, less is known about the influence of the qualities of individual academics in the formation of U-I linkages (Perkmann et al. 2011b). There is evidence that firms value the expertise of individual academics when seeking partners (Blumenthal et al. 1996). In addition, the matching decision has been positively influenced by the degree to which the two parties complement one another in terms of publishing capabilities and knowledge specialisation (Mindruta 2013). Indeed, those academics involved in a broader range of entrepreneurial activities may be more likely to be innovative thinkers and risk takers (Abreu & Grinevich 2013; Siegel et al. 2007), signalling to firms their credibility in terms of exploitation activities. Plus, greater amounts of published outputs by an individual academic

may allow firms to ‘screen’ potential partners and assess their likely knowledge and expertise (Fontana et al. 2006). Furthermore, the importance of the individual academic is perhaps best highlighted by the 'star scientists' arguments (Zucker & Darby 2001). These arguments hold that collaborating with specific academics, who possess the required skill and expertise, can have a larger impact on firms' innovation efforts.

3. Empirical Focus and Method

3.1 University-Industry Links in a UK Context

The previous section set out the theoretical context for the paper, namely, for small firms, the question arises as to whether the characteristics of a university, or whether the behaviours of individual academics can allow them to assess the credibility of these as potential partners in the context of a formal collaboration. In addition, to what extent do proximities play a role in this process? As the promotion of collaborative links between firms and universities is one of the central tenets of UK science policy (Dowling 2015), this appears to be a pertinent question to address. Indeed, commercialising the ‘science base’ has been the aim of successive governments, as evidenced by the series of reviews undertaken over the last two decades (Lambert 2003; Wilson 2012; Dowling 2015). Public funding for university research in the UK currently amounts to around £3.5bn per annum, of which the majority (£3bn) is allocated to pure research. Public funding for industry-based research currently amounts to around £560m per annum. In 2016, 38% of the industrial projects funded involved a university partner; with those that involved a university partner found to be over twice as valuable in terms of value added, highlighting the value of these for the wider economy (Innovate UK 2013).

The analysis in this paper focusses on one scheme, Knowledge Transfer Partnerships (KTPs), which are a significant source of funding for the development and support of links between universities and firms, with around 1600 being funded over the past 10 years. KTPs involve cooperation on an R&D project through a formal partnership between an organisation and a university, i.e. they have the hallmarks of a collective project (Hall et al. 2001). These projects are publicly funded, augmented by a firm contribution based its employees it has. Typically, a small firm will pay around £30,000 per year over a two-year project. In order to develop the idea, the funding allows a full time 'associate', generally a graduate from either an undergraduate or postgraduate degree, to work on the project within the business, supported by an academic from the partner university. The associate is recruited after the project has been agreed and secured funding however, meaning that the initial contacts and scoping meetings involve the firm and academic supervisor.

3.1 Case Study Background

In order to explore the issue of credibility of potential university partners, a case study of 16 small firms, based within the UK, was undertaken. The case study involved semi-structured interviews with owner/managers of small firms, defined according to accepted conventions as those with fewer than 50 employees (Barber & Lambert 1998), which had completed a formal collaborative project with a university through the Knowledge Transfer Partnership scheme in

the last 3 years. Firms participating in the scheme were identified through its web portal, a publicly available resource that provides details of all firms involved as well as enabling them to be sorted by number of employees. Upon identifying participating firms, a purposeful sample of small firms (those with fewer than 50 employees) who had completed a KTP project within the previous three years was compiled.

The rationale for the focus on small firms is based on the fact that they possess fewer resources with which to innovate (Acs & Auderetsch 1990; Huggins & Johnston 2009), thus stand to gain a greater benefit from engaging in U-I linkages (Motohashi 2005). Furthermore, as small firms are under-represented in terms of these links (Laursen & Salter 2004; Mohnen & Hoareau 2003), examining their interactions with universities may shed more light on the motivations, processes, and means by which they develop U-I links to better inform both theory and policy. In order to examine as broad a range of projects as possible so that a wide range of experiences of U-I interaction could be captured, no *a priori* restrictions were placed on the types of firms included; consequently, the case study features firms that operate in a diverse range of sectors such as biotechnology, engineering, finance, and digital marketing.

The choice of a time horizon of three years meant that the case study firms had all embarked on their project between 2011 and 2012 and were therefore funded subject to the same criteria. The interviews took place during the summer of 2014, thus the choice of time scale ensured that the collaboration was still fresh in the memory of the participants. Once the relevant firms had been identified, contact details for each were obtained through their websites. The interviews took place with managers or others in senior positions that had been involved in the project (See Table 1 for details) and were open in nature, which allowed a reflective account of the collaboration to be heard and create a first-hand narrative of the project in question.

[Table 1 around here]

3.2 Methodological Approach

Given its exploratory nature, the paper uses a qualitative approach in order to provide the insights and depth required for examining emergent themes. Furthermore, in order to capture experiences of the respondents, the paper uses a narrative method, influenced by the increasing use of these techniques in both the organisation studies (Czarniawska 1998; Boje 2001) and entrepreneurship literatures (Gartner 2010). This approach provides a useful technique for understanding the events occurring in the course of these collaborative partnerships and allows an interpretation of the participants' perceptions of the credibility of their partners from the viewpoint of those involved. Thus, these semi-structured interviews, based around a loose script, enabled the use of a quasi-'life-story approach' (Johansson 2004) which allowed the participants to discuss events from their point of view rather than based on a pre-defined set of factors (Clandinin & Connelly 2000). Naturally, each respondent differed in their openness to the interviewer; some were happy to talk at length about the project and needed just minimal prompting. When respondents were less forthcoming, the interviewers relied more upon developing focussed-interview narratives (Mishler 1986), i.e. building the narratives through exploring the answers and probing the respondents to go into greater detail with regard to their

specific projects, all the while following the rules of not interrupting and letting the respondent outline various events. Adhering to these protocols ensured that the respondents were given a voice (Bauer 1996). Thus, the fieldwork enabled the creation of a 'multi-voiced' account (Fletcher 2007; Ericson 2010) of the process of developing a collaborative project with a university and the process through which the individuals within the firm go in order to develop the project and select a credible partner.

The interviews were recorded and then fully transcribed afterward; in conjunction, contemporaneous notes were also made in order to capture the nuances of the interview, which assisted with attaching meaning to the transcripts produced (Mishler, 1986; Larty & Hamilton, 2011). While it is widely recognised in the literature that narrative approaches are broad in scope (Larty & Hamilton 2011), the approach utilised in the course of this research has created a set of first person descriptions of events surrounding the experiences of participating in collaborative projects with universities from those involved. The analytical techniques employed followed Ewick & Silby (2003), through utilising a thematic analysis of the interview transcripts. Thus, the analysis does not seek to present the 'life-story' but focuses on a particular aspect of the project, in this case the firms' perceived credibility of their university partner. As such, the aim of the analysis was to get an overview of the project and discuss three elements that were pertinent to the research question: the idea generation, the partner selection process and undertaking the project. Subsequent to this step the analysis was concerned with connecting the stories into a plot in order to highlight the activities that occur within the firms (Steyaert 2007). Consequently, the analysis draws on the structuralist approaches to analysing narrative (Larty & Hamilton, 2011).

The analysis used NVIVO, a specialist software package designed for analysing qualitative data, to examine the transcripts. The first act was to read the transcripts firstly to develop the main plots, in order to add coherence to the story (Boje 2001). In order to develop the plot, the narratives were examined and the coded thematically. The first task for the analysis focussed on breaking the narratives down into plots according to the stage of the project: 1) the initial stage (pre-project); 2) the project stage (undertaking the project); and 3) the post-project stage (once the project was completed). As this paper focuses on the partner selection process the initial stage of project was scrutinised. Following on from this, the second task focussed on identifying sub-plots around: the origin of the project idea, the process of seeking external assistance with the project, and the selection of a particular university partner. It is this final sub-plot that forms the basis of the analysis presented here.

3.3 Evaluating Credibility

Following the development of the sub-plots, the analysis of the transcripts focused on coding with respect to John & Martin's (1984) framework for assessing the credibility of external organisations, providing the initial codes through which the data were examined. This framework provides a broad overview of the concept of credibility, and is based around the

perceptions of a potential partner in terms the extent to which their knowledge fits the prospective project (*realism of expertise*), their ability to stipulate a focus for the project (*specificity*) , a clear logic in the potential partner's plan (c*onsistency*), a lack of apparent gaps in the potential partner's knowledge (*comprehensiveness*), and making valid assumptions with respect to the potential project (*validity*).

Of course, this framework was not uncritically adopted; due to the exploratory nature of the study it provided a useful starting point for analysing credibility. Nonetheless it is not taken to be comprehensive. Indeed, the extant literature on university-industry linkages provides a wealth of factors that facilitate their establishment; as such, this framework provides a template around which the analysis can be organised, and other factors identified and considered. Note, the interview questions were not designed around these factors (i.e. respondents were not asked about 'realism' or 'specificity'), instead they were used ex-post to provide guiding themes for the analysis. Thus, there were no assumptions a priori that any of these factors would either be important or otherwise, nor any rankings in terms of importance (Eisenhardt 1989).

The analysis focussed on the part of the narrative where the respondents described their initial contact with the academic partners and how they decided to proceed with a joint project. The relevant passages were identified and then coded according to the framework. Furthermore, each code was not regarded as mutually exclusive; therefore, every transcript was coded with as many codes that applied to a particular narrative. Once these initial coding had been completed, the quotes were then grouped and compared in order to examine potential similarities and differences to establish the validity of the analysis. The analysis was then organised around these codes in order to provide an overview of the factors that were identified as important in establishing credibility.

Following this initial stage, the transcripts were then re-coded to capture other concepts, which were not necessarily in the initial framework but had been captured in the extant literature, such as proximities and strength of network ties, in order to establish a clear narrative around each of identified factor. Capturing the role of proximities is straightforward in the case of geographic proximity, in terms of examining distance and highlighting local links (Lorentzen 2008; Huggins, Johnston & Thompson 2012), but more complex in terms of non-spatial proximity. Here, we follow Knobben and Oerlemanns (2006) in distinguishing between technological proximity, where actors are working in the same area, and organisational proximity, where actors have a shared history of interaction.

4. Results

4.1 Project Development

The development of a U-I link is not a straightforward process; the analysis reveals that many of these collaborations with universities did not necessarily start out as such. The origins of the projects generally lay within the firms themselves, commonly beginning with their

identification of a development need or capability gap within the firm, i.e. recognising the fact that they would like to pursue a particular idea or direction but faced barriers to doing so. In most cases, these developments focused on the firm's product or service and were generally aimed at extending its capabilities or adapting it for a new market or markets. Thus, the firms appear to be addressing what have been described as 'positive product gaps' in that they are proactively seeking to develop new market opportunities (Foxall & Johnston 1987).

Accompanying this, however, was a clear recognition of their own limitations, imposed by their relative lack of expertise, resources, and finance, which highlighted to them the clear need to look externally for assistance. Consequently, the respondents displayed an awareness of the required improvements in their technology, skills and intellectual property in order to boost their competitive position but that they faced barriers in doing so, and thus required external assistance.

> *"the ideation came from the business and then we went around … looking for support"* [Purple Media].

> *"we were just three people in the business and we had very limited marketing capability, mainly just from a resource perspective, but also because none of us had been sort of specifically in a role that was marketing orientated. So although we knew certain things about how it worked and so on, that wasn't especially our areas of expertise. And we were kind of thinking well how in a small business do we get to implement a lot more marketing activity?"* [Green-soft]

This recognition of a need for external assistance within the firms tended to initiate a search of options for undertaking their projects. Typically, it was this process of examining options for external collaboration that often highlighted the viability of a university partner.

> *"I guess at the time this sort of potential collaboration was kind of all new to us. We were pretty new at running a business, never done that before, didn't have any clue as to what kind of potential linkages could be made with academic institutes. So, yeah, it was a completely new concept to us and sounded like a pretty decent idea. So we were quite keen to roll with it really."* [Green-Soft]

> *"I believe that the [details of the] KTP [programme] came up in the Google search. We then applied and were put in contact with someone that talked us through the process and then they thought of the relevant university which they hoped would be in our area."* [Data-Tech].

However, the benefits of working with a university were not necessarily knowledge based; instead the funding associated with these types of collaboration was the factor that attracted the firms. In many cases, this meant that their choice of partner was motivated by the firms' need

to leverage investment for the project. As such, obtaining the relevant knowledge and expertise was sometimes seen as secondary:

> *"we didn't need [the university's] expertise. We needed their money, and what they were also offering was an academic input which was stuff we wanted to do anyway, and they were able to offer an academic department which would help us do what we wanted to do"* [Patient-Tech].

Universities were, overall, generally viewed as favourable partners by the respondents; the firms were therefore happy to engage with universities as they viewed them as bringing robustness and rigour to the project. In short, engaging with a university allows a firm to

> *"get a very motivated, very bright person for, well, frankly, not much money, and you've essentially free access to, you know, best practice round the world, research, peer review, you know … it's a cracking deal"* [Magnolia Support].

Furthermore, at the outset of the project, the risks to the firms were generally viewed as benign; the only risk would be that they were wasting their time rather than placing the viability of the business itself in jeopardy.

> *"We thought it was an experiment. We allocated money and we were committed to try and make it work, but we also thought we might write the money off. I mean, it's, in a sense, almost a piece of research. You can't be sure that that investment was going to pay off and we weren't"* [Magnolia Support].

4.2 Assessing Credibility

In terms of assessing the credibility of their potential partners, the results suggest that this is a process that most of the small firms went through when developing a U-I linkage, and that the firms did not necessarily see themselves as collaborating with a *university* but with an individual *academic*, as demonstrated by the fact that assessments of the credibility of a potential partner focussed on the individual. The foremost indicator of credibility was the realism of an individual's knowledge, specifically how the respondents felt it fitted the projects their firms wished to pursue. This was often highlighted to the respondents through a job title or the particular field of an academic, noting, for example, that the potential partner was a professor in a relevant discipline, or stating that the department in which they worked was the area of expertise they were seeking. Thus, labels that signalled the realism of the partners' knowledge were important signalling mechanisms.

> *"One of the things that actually convinced me very early on was, and again I believe this was a very smart sales guy from [the university] that basically did this, he introduced us to the [academic] that would be, if we proceeded with the project, who was going to be the academic supervisor of the KTP … And I guess I changed more or*

> *less instantly from being very, very sceptical about the relationship to meeting [the academic] and realising well, wow, this guy has actually been out in the big wide world; he's done a lot of quite heavy-hitting jobs in industry for some pretty major organisations; he's worked in places all around the world, this is somebody who could be extremely helpful and useful to the business."* [Green Soft].

To the firms then, these characteristics were signals that the academic partner had the right knowledge and skills for the project. Consequently, facets such as reputation, credentials, and titles were interpreted by many of the respondents to signify that their potential partner possessed the required knowledge and expertise for the project to be successful, and that it was appropriate to the project they wished to undertake. This provided the respondents with the confidence to proceed with the project with a particular partner. Yet, interestingly these signals were all attached to an individual; the respondents were not noting the prowess or performance of a particular university when engaging with potential partners.

The importance of relationships with individuals was also highlighted through the existence of a long-standing relationship with an academic, which provided the respondents with an insight into the field in which the academics operated and, accordingly, their expertise. Again, titles acted as a signal of ability, but the existence of a shared history allowed the respondent to *understand* the partner's work in the field and confirm to them that it fitted their need.

> *"I'd just known [the academic] for a long time there. I just knew he knew a lot about [our area of business]. He'd written a lot of papers. He'd speak at conferences"* [Magenta-Design].

It is noteworthy that the importance of the individual again comes to the fore here; the respondents are not talking about the characteristics and capabilities of a university but the person with whom they would be working in the future. Hence, realism refers to the individual rather than the institution, suggesting that credibility focusses on the person and not the university.

Furthermore, experience and familiarity of an individual's work was found to allow the respondents to interpret the realism of their potential partner's knowledge through possessing an understanding of where this work fitted in the broader field. This then reinforces the realism of a potential partner's knowledge through providing an insight into its comprehensiveness. Accordingly, a shared background may provide the ability to judge credibility through assessing the realism of a potential partner's knowledge.

> *"Well [the academic partner's] background was in the field ... that we were looking at, and we've got some experience here in that field as well so, you know, from talking to people and from the papers that are produced and the types of things they talk about, you can get a good feel for their expertise"* [Mine-Tech].

> *"the [academic] concerned had published papers, which we read and thought were appropriate and, you know, evidenced the fact that she had a good knowledge of the kind of area that we were interested in really, in terms of carrying out a kind of a study. [T]hrough discussion and meeting with her and also [her head of department], who's got a good reputation in the area, we felt that there was a kind of matching of interests ... she's actually carrying out studies that feed into studying government standards"* [Arc-Tech].

This finding suggests that may be a role for organisational and technological proximity between the actors reinforcing the realism of a potential partner's knowledge through providing an insight and allowing a judgement on it comprehensiveness. However, it must be noted that this finding is only apparent in around one-quarter of the partnerships examined.

In addition, there was evidence that realism is only weakly related to the geographic proximity of a potential partner. Consequently, while the ability to network locally may, in some cases, provide another opportunity to assess a potential partner, these findings suggest that it plays a limited role as there was only one case where local interactions were mentioned as a means for developing U-I links. Secondly, Table 1 shows that the distances between partners varied substantially, with the closest being less than 1km apart and the furthest over 280km apart. Thus, in terms of their influence on credibility, the evidence suggests that the respondents could assess the credibility of their potential partners in the absence of any type of proximity.

[Table 2 around here]

Despite the general reliance on credentials and titles as signals of realism, and therefore credibility, there were those who did not value these. For example, some were not convinced of the value of academic research in their area,

> *"I think actually, in our field, the research isn't particularly cutting edge and our interest is in the applied end, of which there isn't a huge amount. There's some, but it tends to be repeated. So, the benefit is more the sort of, the kudos by association ..."* [Indigo Consultants].

As such, credentials may not always be sufficient; what may appear to some small business owners as legitimate qualifications are seen by others as unsatisfactory. Thus, there may be limits to the importance of realism; while it may provide a relatively trustworthy signal of credibility, it is not a guarantee that the partner will be appropriate to the firm's needs. In these situations, it may be that only through actually working together can the firm assess compatibility and then decide whether they have picked an appropriate partner. Blue Finance typified this when observing that their proposed partner

> *"was a professor, he was a technology professor, and he had the required skills and he headed a department doing that, but clearly it seemed it was just about getting the money for his Department, because, I'm being absolutely honest in this, I did not see him once after the*

> *contract was signed ... unless you're actually doing a project jointly with them, you just don't know and maybe universities need to know more about business and businesses need to know more about universities. It may be more of a two-way process"* [Blue-Finance].

In addition to realism, specificity, or the ability of a potential partner to stipulate a specific focus for the project based on their expertise, was also seen as a positive signal of their credibility. Here, the respondents were interpreting credibility through the ability of a potential partner to suggest potential areas of exploration, or solutions to the problem the firm faced on their initial meeting. For example, one firm noted that their prospective partner

> *"had done his homework, so he came along and he knew something about the business, he'd quickly grasped what we were trying to do, was asking the right sort of questions. Even in the first meeting he was talking about the kind of things he might do with the associate. So that just builds confidence. So that's what made us comfortable, I guess"* [Edu-Tech].

However, specificity was not as prevalent as realism for highlighting the credibility of a potential partner. This factor was a factor for two of the sixteen firms in the study. Furthermore, specificity was also not necessarily reinforced by other characteristics as was the case with realism; the respondents felt their partner was credible in a face to face discussion of the actual project.

Yet there were also drawbacks to relying on specificity, while potential partners may be able to stipulate a focus for the project it did not mean that they could deliver. In the case of Gen-Tech, the partner university gained credibility through suggesting ways to tackle the project in question but could not deliver.

> *"They [the academic partner] said oh, you've got to try this, you've got to do this, you've got to do this, you've got to do this; we've got this equipment that's going to help that. Do you know what, that's science. You have to… some people will say, we can do it, and then they can't. Others will say they can't do it, and they can do it. Others say you've got to do some kind of empirical development of it and we'll either get lucky or we won't. What happened with us is that we embarked on this KTP in good faith and whilst we very, very much liked the KTP student, who was excellent, we didn't get anything from the University. There was no knowledge transfer"* [Gen-Tech].

Finally, there were also instances where other factors were important, and credibility of the potential partner does not appear to be directly observed; one firm was happy to rely on the recommendation of the relevant funding body (Black Electronics). In this case, the firm appears to be relying on indirect credibility through the words or actions of other trusted actors. In two other cases, weak ties appeared to be important for assessing credibility indirectly. In the first case (Brown Media), where two universities approached the firm through cold calling, they

chose the university that had worked with firms it had worked with. In the second case (Magnolia Support), the firm relied upon observing the stature of other firms the university had previously worked with as a means of judging their likely effectiveness. Thus, credibility may be assessed through less direct means. Finally, for one firm there was no attempt to establish the credibility of a potential partner, instead they relied on "blind faith" that it would work (Data-Tech).

The analysis also yielded some insights into potential relationships between credibility and project success. These findings are summarised in Table 3, and the outcomes are decidedly mixed, with a wide variety of outcomes apparent. There were a number of projects where the outcomes were regarded as unsuccessful, with five firms reporting as such (Blue Finance, Gen-Tech, Black Electronics, and Cyan-Soft, Brown Media). In contrast, five firms reported that their projects were successful (Edu-Tech, Mine-Tech, Data-Tech, Arc-Tech, Magenta Design, Indigo-Consultants, and Magnolia Support), with the remaining four having mixed outcomes (Patient-Tech, Pink Soft, Motor-Tech, and Green-Soft). There is no clear link, however, between the perceived success of the project and the credibility of the academic partner. Where the credibility of the partner was directly observed, there is an almost equal split in terms of whether the projects were successful (seven) or unsuccessful (five). Where the firm indirectly observed the credibility of a partner, a similar pattern was observed with three reporting a successful project outcome and two reporting the opposite.

In examining the unsuccessful projects in more detail, it is clear that even where the respondents felt that they had established the credibility of the potential academic partner that the project was still unsuccessful, mostly due to a lack of knowledge. However, it is also notable that where credibility is perceived in terms of multiple factors, the projects were regarded as successful (Mine-Tech and Arc-Tech). Thus, it may be that establishing the credibility of a partner on multiple factors provides a superior method for assessing whether they will indeed deliver on their promises.

In spite of the mixed results with respect to the overall success of the project, the majority of firms reported that they would collaborate with a university again based on their experiences. Indeed, where the projects were deemed to have succeeded, at least in part, the majority of respondents stated that they were more likely to subsequently pursue a further U-I linkage. Consequently, this confirms previous work that suggests that prior ties are an important determinant of U-I linkage formation (Johnston & Huggins 2016). Thus, a true assessment of credibility may only be possible post-project.

[Table 3 around here]

5. Discussion

5.1 Theoretical Implications

This analysis suggests that when small firms assess the credibility of a potential university partner they focus on the individual academic rather than the university. Here, the crucial factor is the perceived realism of an academic's knowledge, as this emerges as the most cited factor. In addition, other factors such as comprehensiveness and specificity of that knowledge were also used to assess their credibility but not as often. As such, there is no single method for assessing credibility but many, and it appears that source credibility is more important than message credibility (Gupta & Wilemon 1988). Thus, the focus on who is communicating the message shown to be more prevalent than what was said. Therefore, credibility can be considered to be an individual level construct and does not appear to be understood from an institutional perspective (Blumenthal et al. 1996).

[Table 4 around here]

While the analysis has highlighted the most visible components of credibility as realism, comprehensiveness, and specificity, it also shows that two components of the framework, consistency and validity, do not appear to be important to the small firms. A number of reasons for this are postulated, rooted mainly in the fact that the types of project the firms were pursuing were what Perkmann and Walsh (2009) described as 'technology projects'. These projects thus involve the development of ideas that were generally not 'market ready', but where a general requirement has been set out by the firm. Thus, with reference to consistency, the fact that each firm developed the project idea themselves meant that the respondents knew what they were looking in terms of appropriate knowledge and expertise, and also required a confirmation of their plan. Thus, from the firms' perspective, they did not need to understand the logic of the university partner's plan, instead it was a need for their plan to be understood, rendering validity moot as a harbinger of credibility.

Consequently, the process of collaborative project development discussed here captures a process by which the firms were looking for the potential academic partner to have an input into their project. Here then, credibility appears to be assessed in terms of whether the academic was able to develop the firms' ideas. Crucially, this again highlights the earlier assertion that partner credibility in these cases was evaluated on an individual level (Blumenthal et al. 1996; Mindruta 2013; Rajalo & Vadi 2017), when the respondents were discussing the factors that influenced their decision to enter a particular collaborative partnership they all focussed on the academic rather than the institution or even their department, echoing the findings of D'Este and Patel (2007). Thus, while institutional level metrics have been shown to influence the formation of U-I links (Hewitt-Dundas 2012), these results suggest that the characteristics of the individual academic are more important, giving further credence to the 'star scientist' arguments (Zucker & Darby 1996; Zucker & Darby 2001).

Despite the focus on the individual academic, there was scant evidence of 'screening' (Fontana et al. 2006) by the firms in terms of them examining publication records, with only one respondent suggesting that they had done this (Arc-Tech). Instead, the assessment of credibility appears to be centred around job titles as a proxy for knowledge, coupled with the ability of an individual to engage in the project idea; a combination of *person* and *message*. However, the caveat to this finding is that it may result from the type of project being examined here; the

KTPs were relatively low value (involving a total investment of around £60,000), with the majority of the funding being from public money. Thus, as stated by one respondent (Magnolia Support), the projects themselves were generally regarded as a low risk to the business, with a negative outcome being a waste of time rather than jeopardising the firm's survival. Consequently, examining the partner selection process for projects of higher value, greater complexity, and riskier in nature may highlight a different process of assessing credibility.

These findings also shed some light on the lack of importance of geographic proximity in the assessment of credibility. Zucker and Darby (2001) found that where there is greater importance on the characteristics of individuals in the U-I link formation process, the influence of geographic proximity is lessened. This finding runs contrary to previous findings that suggest that this is of greater importance to small firms (Johnston & Huggins 2017) Indeed, the findings outline a distinct lack of influence of any proximities with respect to assessing the credibility of potential partners. Where proximity was influential, it was organisational and technological proximity that appeared to be more important to assessing credibility than geographic proximity. As such, when using credibility as a theoretical lens with which to understand the process of U-I link formation, the role of proximities appears to be minor.

5.2 Practical Implications

The practical implications of these results may contribute to a smoother process of U-I links development, removing the friction in their formation and enabling a reduction in the uncertainty experienced. Firstly, the lack of importance placed on consistency, coupled with the absence of validity as a means of assessing credibility highlights the relative importance of realism and specificity as indicators of the credibility of academics. Thus, from a practical point of view, an academic partner is required to show that they are able to engage with a firm, as they were typically looking for their potential partners to engage with their project from an applied standpoint, rather than making any assumptions about it. Secondly, the firms' focus on the realism of a potential partner's knowledge was the key to judging credibility, typically gauged through their titles and credentials, highlighting a clear strategy through which academics can sell themselves to potential partners.

Furthermore, as the projects evolved from within the firms, who then sought out ways to collaborate externally, the findings have highlighted a specific set of factors that are important for establishing credibility of the university partner. This poses a question of whether the projects had developed in a different direction, where a university/academic has to convince a firm to join them, a different set of factors would be important?

The analysis suggests that indirect credibility may also be important, as it is not necessarily the actions of the academics themselves but who they have been interacting with and who may recommend them to potential. This finding effectively extends the framework to consider other factors other than those that may be observed through direct interaction. Thus, weak ties and networking effects should also be considered as factors that influence the interpretation of the credibility of academics as collaborative partners, highlighting the need for individuals to

cultivate these types of links (Granovetter 1973; Gulati & Gargiulo 1999; Huggins, Johnston & Thompson 2012).

Finally, it must be noted that there appears to be no clear link between establishing the credibility of a partner and the ultimate success of a project. It is clear from the analysis that most firms did feel their potential partners were credible at the start of the project, but that in some cases the required knowledge and expertise did not materialise. However, in the two cases where credibility was established in terms of multiple factors, both projects were regarded as successful. Thus, the caveat that must be stated is that in practical terms, establishing the credibility of a partner may highlight their suitability for a project but it is no panacea for success.

5.3 Policy Implications

With respect to policy implications, the identification of several mechanisms through which small firms assess the credibility of potential partners has significant implications for both universities, especially Technology Transfer Officers (TTOs) looking to promote these links for their institution, and policymakers looking to encourage collaborative innovation projects. Firstly, the results give clear insights into the processes through which SMEs choose universities and can encourage TTOs to highlight the credibility of their institutions through realism of their expertise and the comprehensiveness and the specificity of their knowledge, i.e. showing that they possess the right knowledge, in sufficient depth, and can apply it to the problem the firm faces. Secondly, policymakers charged with promoting university-industry linkages can look beyond simple proximity (i.e. encouraging collaborations over small distances) to focussing on the means by which they can enable the credibility of academics and universities to small firms to be highlighted and promote linkages accordingly.

6. Conclusions

The analysis presented in this paper examined how the credibility of a potential partner is assessed by small firms engaging in collaborative linkages with a university. The results show that credibility can be conceived as an individual level concept, focussing on the academic and their message, rather than their institution. Thus, to these small firms, the credibility of their potential partner was assessed mainly on the realism their knowledge, in terms of. how well it fitted with the project the firms wish to pursue. In addition, both specificity, characterised as the extent to which a potential partner can outline a plan of action, and the completeness of their partners' knowledge, characterised as the extent to which they show a breadth and depth of knowledge, were also important determinants. Consequently, through examining the process of collaborative link formation between small firms and universities, the paper contributes new insights to the extant literature through the suggesting credibility as a new lens through which the formation of these linkages can be understood.

As suggested within the literature, these findings confirm that credibility is indeed a multi-faceted concept (John & Martin 1984). As such, there is no one method for ensuring an academic and/or their university appears to be a credible partner, but multiple methods for ensuring that they appear to be able to deliver on their promises. Accordingly, from the point

of view of the Higher Education sector, appearing to be credible requires academics to be able to highlight the applicability of their knowledge base to firms, highlight the depth of their knowledge, and be able to clearly articulate how they can apply their knowledge to any given project.

The study is not without its limitations; due to its exploratory nature and small sample, the results cannot be considered generalisable. Despite this, they do in fact suggest a future avenue of research as these findings represent new developments that require testing quantitatively with a larger sample in order to assess their general nature as well as examining the formation of U-I links involving larger firms to look at the way in which credibility may be assessed by these firms. Furthermore, the potential relationships between success and credibility require a broader examination; i.e. whether a more credible partner can predict the ultimate success of a project

In addition, the extant literature has established there are a wide variety of means through which U-I links develop (D'Este & Patel 2007) and this paper focuses on one of these types, formal joint research projects. Thus for other types of collaboration, particularly those initiated by the academic partner, described as 'knowledge generation' projects whereby firms are approached to engage in a proposal developed by the academics (Perkmann & Walsh 2009), the assessment of partner credibility may follow a different pattern. Consequently, there is scope for follow up work to examine whether firms involved in these types of formal collaboration, plus methods firms may engage universities, such as consultancy work, contract research, and training activities, to examine whether assessing the credibility of potential partners follows a similar pattern. Indeed, examining consultancy and contract relationships, that are not reliant upon public funding as is the case with KTPs, where the firms have to fund the entire project themselves may prove an interesting context.

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Table 1: Case Study Firms

Firm	Interviewee	Sector	Size	Turnover	Distance from Partner (Km)
Patient-Tech	Managing Director	Medical Consultancy	3	£850,000	193
Pink-Soft	Director	Software	27	£3.5 million	33
Motor-Tech	Chief Executive	Electric motor simulation software	23	£1 million	18
Blue Finance	Managing Director	Accident investigation software and consultancy	15	£4 million	30
Edu-Tech	Managing Director	Education consultant/online assessment	12	n/a	81
Green-Soft	Managing Director	Suppliers of analytical instrumentation/equipment	7	£1.2 million	14
Mine-Tech	Technical Director	Scientific analysis of geological material	20	£4.5 million	149
Gen-Tech	Managing Director	Biotechnology - DNA Therapies/technology	12	£9 million	158
Brown Media	Managing Director	Media consultants	31	n/a	12
Data-Tech	Chief Executive Officer	Financial data software/analysis	12	n/a	26
Arc-Tech	Director	Architectural Consultants	50	£3 million	140
Magenta-Design	Managing Director	Design of play areas	40	£4 million	1
Indigo-Consultants	Managing Director	Health and Social Care Consultancy	7	n/a	287

Black-Electronics	Managing Director	Electronics Manufacturing	27	£4 million	3
Cyan-Soft	Managing Director	IT Support	17	£800,000	11
Magnolia-Support	Managing Director	Project management/support	50	£13 Million	48

Table 2: Influences on Partner Choice and Sources of Credibility

Firm	Factors influencing Partner Choice	Credibility based on ...	Other Influences
Patient-Tech	Partner academic worked in the same disciplines.	Realism	
Pink-Soft	Perceived reputation of the university for working in the discipline they required the expertise in.	Realism	
Motor-Tech	The partner was working in the relevant discipline at a local university, which also employed the respondent's wife who provided the introduction.	Realism	
Blue Finance	The credentials of the prospective partner, which made them feel they had approached the right person. Previous experience of working with universities and were familiar with the process.	Realism	Organisational proximity
Edu-Tech	The academic impressed with their knowledge of the area and their particular project.	Specificity	
Green-Soft	Meeting the potential supervisor and seeing his experiences matched theirs.	Realism	
Mine-Tech	Working in similar areas brought them into contact with the academic partners, so could observe first hand their knowledge and expertise.	Realism/Comprehensiveness/	Technological proximity
Gen-Tech	One of their scientists knew and recommended an individual from the university as they thought their knowledge fitted the problem.	Realism	
Brown Media	The firm were approached by two universities, they chose the one that their clients were working with at the time.	Other	Weak ties
Data-Tech	Blind faith that the university would be the solution.	Other	Blind faith
Arc-Tech	Initially it was the academic reputation of the person concerned, but firmed up through their initial discussions.	Realism/Comprehensiveness/Specificity	
Magenta-Design	Local networking meant that he knew that the individual was working in the right discipline.	Realism	Geographic proximity
Indigo-Consultants	Personal friendship with the academic partner meant that his research interests were known to them	Realism	Organisational proximity

Black-Electronics	Firm was guided by the recommendation of those running the KTP programme	Other	Recommendation
Cyan-Soft	Academic came across as possessing the required knowledge and expertise from reading their CV and first meeting	Realism	
Magnolia Support	Reputation of other firms the university had worked with	Other	Weak ties

Table 3: Credibility and Project Outcomes

Firm	Project Outcome	Further Collaboration	Credibility Factors
Patient-Tech	Some success but much less than expected	Yes	Realism
Pink-Soft	Not an unqualified success, outcome short of what was hoped	No	Realism
Motor-Tech	Project not successful due to lack of market. Secondary aim of recruitment successful though	Yes	Realism
Blue Finance	Complete failure	No	Realism
Edu-Tech	Very successful: product launched on time and generated sales quickly	Yes	Specificity
Green-Soft	Project failed due to university admin - achieved goals outside of project with same academic	Yes	Realism
Mine-Tech	Commercially and scientifically successful	Yes	Realism/Comprehensiveness/
Gen-Tech	Unsuccessful; partner did not have the knowledge they thought they had	No	Realism
Brown Media	Unsuccessful: associate left business and project was side-lined and left unfinished due to lack of resources	Yes	Other
Data-Tech	Successful, firm have doubled their client roster as a result	Yes	Other
Arc-Tech	Very successful. Has provided firm with a lot of useful data to incorporate into their work	Yes	Realism/Comprehensiveness/ Specificity
Magenta-Design	Successful: firm feels outcomes have changed the way the industry works	Yes	Realism
Indigo-Consultants	Successful: product works as it envisaged	Yes	Realism

Black-Electronics	Unsuccessful: outside assistance was required to finish the project	No	Other
Cyan-Soft	Unsuccessful: only a small piece of the work was useful	Yes	Realism
Magnolia-Support	Successful: project worked as intended	Yes	Other

Table 4: Characteristics Used in Assessing Credibility

Factor	Observed Traits
Realism	• Titles/credentials • Previous outputs/research projects • Recommendation (external credibility) • Weak ties • Ongoing relationship (organisational proximity • Local networking (geographic proximity)
Specificity	• Engaging in project idea • Proposing direction for project • Working in the same discipline (technological proximity)
Comprehensiveness	• Ability to understand project idea